Duodenal gastrinoma treated with endoscopic band ligation

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Gastrinomas are endocrine tumors associated with the Zollinger-Ellison syndrome (ZES). Surgical exploration is recommended to achieve a cure in all patients without liver metastasis or multiple endocrine neoplasm-I. For those who refuse surgical exploration or for those who are not surgical candidates, medical treatment with proton pump inhibitors has a role in controlling the complications. There are few data in which endoscopic therapy has been used to treat symptomatic duodenal gastrinomas. Thus, we report a case of a duodenal gastrinoma that was treated with endoscopic band ligation (EBL).

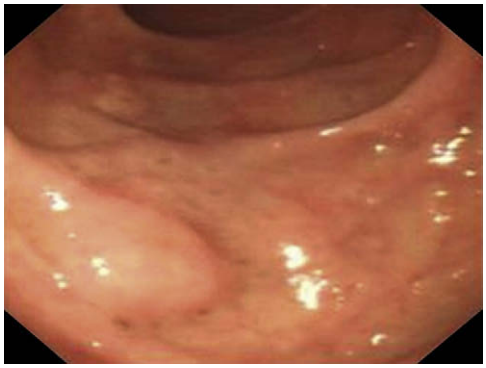

Figure 1. An SMT in the second portion of the duodenum.

CASE REPORT

A 52-year-old Asian man presented with semisolid-food dysphagia and epigastric soreness of 3 months' duration. He had been irregularly managed with a double dose of a proton pump inhibitor (rabeprazole, 80 mg/day) for recurrent gastroesophageal reflux disease (GERD) and peptic ulcer due to ZES for 7 years. He had a 30-pack-year history of cigarette use (1 pack/day). The physical examination was unremarkable. Serum parathyroid hormone and calcium levels were normal. The serum gastrin level had increased to 647 pg/mL (reference range, < 90 pg/mL).

Upper GI (UGI) endoscopy revealed severe reflux esophagitis (LA classification D) with an ulcerative stricture in the mid esophagus (32 cm from the incisor teeth). A 9-mm-diameter endoscope (GIF-Q260; Olympus, Tokyo, Japan) could not be passed to the distal portion of the esophagus due to the stricture. Endoscopic balloon dilatation (EBD) was performed with a 10- to 12-mm-diameter controlled radial expansion balloon (Boston Scientific, Boston, Mass) every month to relieve the dysphagia. On subsequent endoscopy, a small submucosal tumor (SMT) was suspected in the second portion of the duodenum (Fig. 1), and endoscopic deep biopsies (multiple biopsies at a single site) revealed a gastrinoma (Fig. 2A and B). CT of the abdomen showed an 8-mm-sized hyperattenuated nodular lesion in the second portion of the duodenum (Fig. 3). No definite abnormal radioactivity was demonstrated on In111-octreotide whole-body scintigraphy (Fig. 4). EUS could not be performed because the echoendoscope (GF-UM2000, Olympus, Tokyo, Japan) could not pass the esophageal stricture even after a 15-mm EBD. Because the patient declined surgical resection, the plan was to remove the gastrinoma endoscopically. A standard endoscope with a transparent cap attached to the tip was used with a Stiegmann-Goff Endoscopic Ligator kit (Bard Interventional Products, Mentor, Ohio). The cap was placed over the lesion, maximum suction was applied, and the band was released around the base (Fig. 5A). There were no immediate or delayed complications.

One month later, a UGI endoscopy showed sloughing of the lesion with a peripheral nodular lesion (Fig. 5B); a biopsy from the scarred tissue showed no remnant tumor, and the postprocedure serum gastrin level had declined to 221 pg/mL one month after the EBL. Additional EBL was applied to the peripheral nodular lesion at the previous EBL site. A follow-up test showed that the patient's serum gastrin level had declined to 100 pg/mL 3 months after initial EBL. Follow-up UGI endoscopy showed sloughing of the lesion, and a biopsy specimen obtained from the scarred tissue showed no remnant tumor. In spite of the EBD for the esophageal stricture and removal of the duodenal gastrinoma with EBL, the patient continued to have dysphagia. However, the degree of dysphagia had improved, and he was able to tolerate semi-solid foods. The interval of restenosis had lengthened to about 8 weeks.

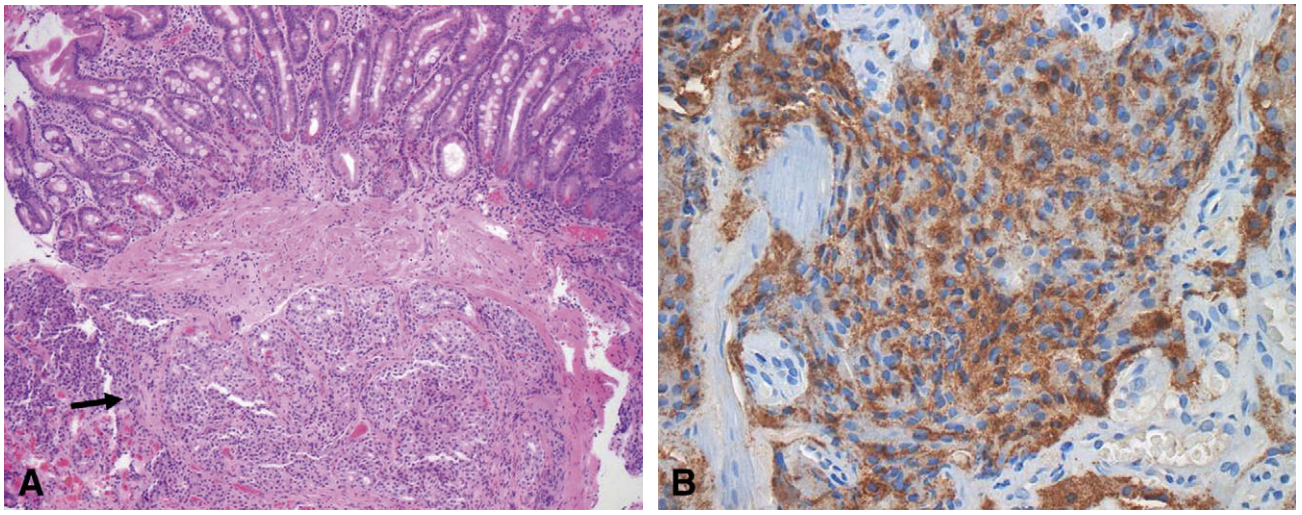

Figure 2. Histologic features of a duodenal SMT. **A,** Tumor with a solid, organoid pattern was found in the submucosal layer (*arrow*, H&E, orig. mag. ×100). **B,** These cells are stained for gastrin (gastrin stain, orig. mag. ×400).

Figure 3. CT scan of the abdomen shows an 8-mm-sized, enhanced nodule at the duodenal second portion (*arrow*). **A,** Coronal section. **B,** Frontal section.

DISCUSSION

ZES due to a gastrinoma characteristically causes peptic ulcer disease and/or GERD. It is reported that more than 50% of gastrinomas are located in the duodenum.[1,2] If metastatic disease to the liver is not present and the patient does not have multiple endocrine neoplasia-I, surgical exploration is usually recommended.[1-4] However, there is no standard operative approach that incorporates methods that improve intraoperative detection of gastrinomas,[3] and it is still an invasive procedure and not available to patients who decline surgery.

EBL has been widely used for the treatment of variceal bleeding, bleeding ulcers, Dieulafoy's lesions, Mallory-Weiss